DISCUSSION OF THE CLAIMS

Support for amended Claim 1 is found at specification page 11, lines 5-9, at specification page 39, line 7 to continuing page 40, line 10, Example 2-1 and page 45, lines 18-21 and in Fig. 2, Example 2-2 and Example 2-1 at 100 hours. Particularly, the support for "aluminum magnesium titanate honeycomb carrier" and "aluminum titanate honeycomb carrier" is found at specification page 11, lines 5-9.

Support for amended Claim 21 is found at specification page 28, lines 17-25 and in Fig. 2. Importantly, the support for "4%" and "16%" in amended Claim 21 and new Claim 22 is found in Fig. 2 where one of ordinary skill in the art would readily recognize the extrapolated data points of Example 2-2 (99% in β) and Example 2-1 (95% in β) at 80 hrs and the data points of Example 2-2 (98% in β) and Example 2-1 (82% in β) at 100 hrs by placing a ruler at 80 hrs and 100 hrs and reading off the data points of Example 2-1 and Example 2-2 between 80 and 100 β(%) in the y axis.

Claims 4-6 and 12-20 have been amended to place the claims in a better format for examination on the merits.

No new matter has been added.

REMARKS/ARGUMENTS

Applicants would like to thank Examiner Melvin Curtis Mayes and Examiner Jun Li for the interview conducted on January 11, 2010 and the indication to further consider the thermal stability at 1000°C as in previously presented Claim 21 if rewritten.

In the present amendment, amended Claim 1 further recites that "a remaining ratio β (%) of the aluminum magnesium titanate honeycomb carrier is higher than the remaining ratio β (%) of an aluminum titanate honeycomb carrier after both the aluminum magnesium titanate honeycomb carrier and the aluminum titanate honeycomb carrier are held at 1000°C for 100 hrs, wherein the aluminum titanate honeycomb carrier is obtained by firing at 1400°C a mixture of α-alumina and anatase-type titanium oxide and an alkali feldspar represented by $(Na_{0.6}K_{0.4})AlSi_3O_8$" (See, amended Claim 1).

Particularly, in a direct comparison of the honeycomb carrier as in amended Claim 1 (Example 2-2) and the aluminum titanate honeycomb carrier (Example 2-1), Applicants disclose that "[i]t is evident that while the remaining ratio in Example 2-1 after expiration of 100 hours in Fig. 2 is slightly low, the remaining ratio in Example 2-2 is still remained at a high level and thus shown that the thermal decomposition resistance is further excellent over Example 2-1" (See, specification, page 45, lines 16-21, and Fig. 2).

The rejections of Claims 1, 4, 5-6, 12-16, 17 and 18-21 under 35 U.S.C. 103(a) as being unpatentable over Ono et al. (US 4,483,940) in view of Giordano et al (Journal of the European Ceramic Society 2002, 22:1811-1822), Fukuda et al (JP 2002-145659) and Noda et al.(US 2001/0056034) are traversed.

As discussed during the interview conducted on January 11, 2010, an aluminum magnesium titanate honeycomb carrier carrier as in amended Claim 1 shows a superior thermal stability even after being held at 1000°C for 100 hrs compared to decreasing thermal

stabilities of the materials in the references as disclosed at specification page 45, lines 16-21 and in Fig .2 and as further evidenced in the declaration filed on October 13, 2009.

Furthermore, as the Office recognizes, "[O]no fails to specifically teach the component of the honeycomb carrier is a sintered product containing Mg, Al, Ti containing compound with an empirical formula $Mg_xAl_{2(1-x)}Ti_{(1+x)}O_5$ with addition of alkali feldspar represented by $(Na_yK_{1-y})AlSi_3O_8$ (wherein $0 \leq y \leq 1$)" (See, Office Action, page 2). Additionally, Ono further fails to disclose or suggest the aluminum magnesium titanate honeycomb carrier having a high remaining ratio β (%) of aluminum titanate as in amended Claim 1.

Giordano discloses compositions of $Al_{1.8}Mg_{0.1}Ti_{1.1}O_5$ ($x = 0.1$) and $AlMg_{0.5}Ti_{1.5}O_5$ ($x = 0.5$). Giordano further discloses the effect of MgO on Al_2TiO_5 as follows (See, Giordano, page 1812, left Col. lines 12 to continuing right Col. lines 1-4, emphasis added).

> "[H]owever, a serious drawback of Al_2TiO_5 is its thermodynamic instability beween 1280 and 900 °C.[20-23] To inhibit decomposition in the parent oxides, different stabilizers (MgO, Fe_2O_3, ZrO_2, SiO_2) have been proposed.[20] The addition of MgO leads to the formation of a Al_xTiO_5-$MgTi_2O_5$ solid solution of composition $Al_{2(1-x)}Mg_xTi_{(1+x)}O_5$, where x is the molar fraction of $MgTi_2O_5$.[21] A substantial amount of MgO (10-25 mol%) is required to significantly increase the lifetime of ceramic components, <u>even though long-time stabilization of aluminum titanate in the range of 1000-1100 °C is still an open problem</u>.[22,23]"

As disclosed above, Giordano clearly recognizes that simply adding MgO to Al_2TiO_5 does not improve long-time stabilization of aluminum titanate in the range of 1000-1100 °C. Thus, as the Office has recognized during the interview, in light of teachings of Giordano, there would be no motivation for one of ordinary skill in the art to add MgO to Al_2TiO_5 to improve the long-time stabilization of aluminum titanate in the range of 1000-1100 °C as in amended Claim 1.

Fukuda does not cure the deficiencies of Ono and Giordano. Fukuda discloses an aluminum titanate with alkali feldspar. However, Fukuda does not disclose or suggest an aluminum magnesium titanate of empirical formula $Mg_xAl_{2(1-x)}Ti_{(1+x)}O_5$ as in amended Claim 1. Furthermore, in Fukuda, there is no disclosure or suggestion of improving the thermal decomposition resistance at 1000°C for 100 hrs as in amended Claim 1.

Importantly, as described above, Applicants disclose a superior thermal stability of the aluminum magnesium titanate honeycomb carrier as in amended Claim 1 compared to the aluminum titanate honeycomb carrier of Fukuda. (See, specification, page 45, lines 16-21, and Fig. 2, Example 2-2 and Example 2-1).

As to Noda, Noda discloses a catalyst comprising Si and optionally Mg. However, Noda does not disclose or suggest the honeycomb carrier: 1) comprising an aluminum magnesium titanate represented by the empirical formula $Mg_xAl_{2(1-x)}Ti_{(1+x)}O_5$ (wherein $0<x<1$) and an alkali feldspar represented by the empirical formula $(Na_yK_{1-y})AlSi_3O_8$ (wherein $0<y<1$); and 2) improving the thermal decomposition resistance at 1000°C for 100 hrs as in amended Claim 1.

Thus, in light of the disclosures of Ono, Giordano, Fukuda and Noda 1) there would be no motivation for one of ordinary skill in the art to combine aluminum titanate, MgO and alkali feldspar to improve long-time stabilization of aluminum titanate in the range of 1000-1100 °C and 2) and the one of ordinary skill in the art would not have foreseen the aluminum magnesium titanate honeycomb carrier improving the thermal decomposition resistance at 1000 °C as in amended Claim 1.

Furthermore, as described in the declaration filed on October 13, 2009, Applicants have indicated that the superior thermal stability of the presently claimed aluminum magnesium titanate honeycomb carrier intensifies at 1100°C. Importantly, none of the references cited disclose or suggest the superior thermal stability of the presently claimed

aluminum magnesium titanate honeycomb carrier at a temperature between 1000 and 1100 °C for 100 hrs or more.

Therefore, Ono in combination with Giordano, Fukuda and Noda cannot make obvious amended Claim 1 and the dependent claims thereafter.

Withdrawal of the rejections is respectfully requested.

Consequently, in view of the present amendment, no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for formal allowance. An early and favorable action is therefore respectfully requested.

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.
Norman F. Oblon

Soonwuk Cheong, Ph.D.
Registration No. 62,793

Customer Number
22850

Tel: (703) 413-3000
Fax: (703) 413 -2220
(OSMMN 06/04)